



**HAL**  
open science

**The authors reply: In reply to the Letter to the Editor  
titled: “Ultrasound for pulmonary gangrene: all that  
glitters may not be gold.”**

Mathieu Echivard, Daniel Lichtenstein, Nicolas Girerd

► **To cite this version:**

Mathieu Echivard, Daniel Lichtenstein, Nicolas Girerd. The authors reply: In reply to the Letter to the Editor titled: “Ultrasound for pulmonary gangrene: all that glitters may not be gold.”. *Critical Care Medicine*, 2020, 48 (4), pp.e337. 10.1097/CCM.0000000000004240 . hal-02611055

**HAL Id: hal-02611055**

**<https://hal.univ-lorraine.fr/hal-02611055>**

Submitted on 18 May 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Lung ultrasound and pulmonary gangrene, step by step

**In reply to the Letter to the Editor titled: “Ultrasound for pulmonary gangrene: all that glitters may not be gold.”**

Mathieu Echivard, MD<sub>1</sub>; Daniel A. Lichtenstein, MD, FCCP<sub>2</sub>; Nicolas Girerd, MD, FHFA<sub>3</sub>

<sup>1</sup>Service de Cardiologie, CHU de Nancy, Institut Lorrain du Coeur et des Vaisseaux, Nancy, France.

<sup>2</sup>Service de Réanimation Médicale, Hôpital Ambroise-Paré, Boulogne (Paris-Ouest), France.

<sup>3</sup>Université de Lorraine, INSERM, Centre d'Investigations Cliniques 1433, CHRU de Nancy, Inserm 1116 and INI-CRCT (Cardiovascular and Renal Clinical Trialists) F-CRIN Network, Nancy, France.

**Authors disclose no financial or ethical conflicts of interest regarding the contents of the submission.**

## **To the Editor:**

We thank Nadeem et. al. (1) for their interest in our article entitled “B-mode ultrasound findings in a patient with suspected pulmonary gangrene” (2) and would like to respond to their letter.

As mentioned in our article (2), the patient was initially admitted for an evaluation of his esophagus cancer. The computerized tomography (CT) performed during this assessment, one week before our lung ultrasound evaluation, found no abnormalities in lung parenchyma, especially no tumor, metastasis or encysted pleural effusion. By the way, our ultrasound exam found no mass or pleural effusion. The tracheal aspirations revealed only purulent fluid, without any food particles. Our case was ultimately a patient with no previous pulmonary abnormalities who developed nosocomial pneumonia which condition rapidly became critical under probabilistic antibiotics. These clinical features combined with our ultrasound findings make pulmonary gangrene the most likely hypothesis.

Lung ultrasound is not described as a substitute for CT, which must be so far a necessary tool in such a disease, even for experienced physicians. Lung ultrasound can be considered as a complement to physical examination at bedside. It can be performed rapidly and is easily accessible. Inter-observer reproducibility is usually known as very good, even between experienced and novices, and the learning curve is steep (3,4). The quagmire sign we described in our paper is of apparent intuitive understanding and easy to interpret.

Lung ultrasound could however help the management of pulmonary gangrene by enabling a more rapid diagnosis. In the case we reported previously, an earlier ultrasound evaluation would certainly have led to CT scanning and could have led to an early surgery. Instead of monitoring progress after broaden antibiotic coverage and waiting for microbiological sampling results, as was done. More

generally, the reason of nonresolving pneumonia is usually microbiologic (5). In case of nonresolving pneumonia with persistent infection, the management is usually to repeat full microbiological screen and to broaden antibiotic therapy (5). CT scan will only be used as second-line exploration and mainly if a non-infectious cause is suspected (5). This can cause a delay diagnosis in pulmonary gangrene.

In conclusion, the quagmire sign needs to be studied and we wish to see more reports of ultrasound evaluation in similar cases. To understand the therapeutic implications of this sign, we need to ascertain its diagnosis accuracy using any tools, even autopsy and post-mortem CT. Meanwhile, this new sign is standardized, and contributes in making lung ultrasound a standardized discipline.

## REFERENCES

1. Nadeem R, Abdalla Satti RMO: Ultrasound for pulmonary gangrene: all that glitters may not be gold. *Crit Care Med*. 2019
2. Echivard M, Lichtenstein DA, Lala A, et al: B-Mode Ultrasound Findings in a Patient With Suspected Pulmonary Gangrene. *Crit Care Med*. 2019 Oct;47(10):841–4.
3. Bouhemad B, Zhang M, Lu Q, et al: Clinical review: Bedside lung ultrasound in critical care practice. *Crit Care Lond Engl*. 2007;11(1):205.
4. Mozzini C, Fratta Pasini AM, Garbin U, et al: Lung ultrasound in internal medicine: training and clinical practice. *Crit Ultrasound J*. 2016 Aug 8;8.
5. Finch S, Chalmers JD: Brief Clinical Review: Non-Responding Pneumonia. *EMJ Respir*. 2014;2:104-111.

**Conflict of interest:** we profit of this response for correcting a mistake in the article “*B-Mode Ultrasound Findings in a Patient With Suspected Pulmonary Gangrene*”. The conflicts of interest, fundings, honoraria do not regard Daniel Lichtenstein, but Nicolas Girerd.

**Funding:** no funding was provided from any institution.